Hardware Name Outfitted HRF Muscle Atrophy Research and Exercise System (MARES) Rack

Date August 2003

Initial Assessment of Criticality (IAC)

1	ITEM NAME:	Outfitted HRF Muscle Atrophy Research and Exercise System (MARES) Rack
2	ITEM PART NUMBER:	SEG46119535-301
3	DOCUMENT/REPORT DATE:	August 2003
4	FUNCTION: The Outfitted HRF MARES Rack, also known as MARES Integration, Deployment, Assembly and Stowage (MIDAS), will be used to launch, stow and deploy the MARES on International Space Station (ISS). The outfitted rack provides International Space Station (ISS) services and utilities to the MARES installed in the rack.	
5	GROUNDRULES/ASSUMPTIONS: • This assessment is for the Outfitted Rack only. The HRF payloads to be installed and the integrated failure modes/effects are addressed in the respective payload assessments. • The Outfitted HRF MARES Rack will be designed and certified for use on the ISS as a part of the HRF program. The MARES is ESA Provided equipment, certified by ESA, and delivered to HRF.	
6	DESCRIPTION: The Outfitted HRF MARES Rack consists of the HRF MARES Rack Structure, which includes the following: • modified International Standard Payload Rack (ISPR) • various stowage bags that will "kit" the ESA provided hardware • Power Interface Panel (PIP) • associated power and data cables (the data cable will go from MARES to the HRF Workstation). The MARES is designed to carry out research on muscle-skeletal, biomechanical, neuromuscular and neurological physiology to study the effect of microgravity on the human being and to evaluate the effect of the countermeasures to the space environment-induced physiological effects. MARES can also be used to evaluate the performance of exercise tests protocols. MARES is capable of assessing the strength of isolated muscle groups, around specific joints or on complete limbs by measuring and controlling the interrelation between speed and torque/force as functions of time.	
7	EFFECT OF FAILURE: There are no failures associated with premature operation of the Outfitted MARES Rack, as the power switch has to be physically activated. Failure during operation or failure to operate within specification will result in loss of ability to provide ISS services and utilities to the MARES, and consequently, loss of experiment data including the loss of the ability to carry out research. There is no critical or catastrophic effect if the rack were to fail to cease operation at a prescribed time.	
8	CRITICALITY CATEGORY:	3
9	DETAILED FMEA REQUIRED:	No
10	RATIONALE: There are no failures of the Outfitted HRF MARES Rack that will cause loss of life, Station and/or Orbiter. In addition there are no failures that will cause loss of mission. The Outfitted MARES Rack is only used for non-critical operations.	
11	Dana Gomez	Dana L. Gomez PREPARED BY (signature)
	PREPARED BY (printed)	PHONE NO: 281-333-7242
12	CONCURRENCES:	
	Elizabeth Bauer	Elizabeth Bauer 8/26/03
	SUBSYSTEM MANAGER (printed)	SSM SIGNATURE DATE
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	SAFETY AND MISSION ASSURANCE (S&MA) (printed)	S&MA SIGNATURE DATE
14	APPROVALS:	
	Don Totton	8/27/03
	CHAIR (printed)	CHAIR SIGNATURE DATE

JSC Form 1380 (Rev April 26, 2000) (MS Word September 1999)

GOVERNMENT FURNISHED EQUIPMENT (GFE) GROUND SAFETY CHECKLIST

(Used to identify the need for a Ground Safety Data Package. Complete and submit to address below.)

Flight/Mission:	Hardware Name:	Part Number:
	Outfitted HRF MARES Rack	SEG46119535-301

Ground Safety Checklist Questions	Yes / No
1) Does the GFE require a "materials use only certification" (e.g., food, clothing, or bungee straps) ***and*** is the GFE already stowed (in a middeck locker, Spacehab locker, or Crew Transfer Bag) prior to shipping to KSC? If **YES**, then a ground safety data package is not required.	No
2) For unmodified re-flight items, has the GFE previously been processed through the GSRP? If **YES**, provide date of previous GSRP approval.	No __/__/__
If **YES** was your answer to both questions 1 and 2. Sign a printed copy of this Checklist and mail it to the GSRP via NASA pouch mail.	
A **YES** answer to any of the following questions may require submission of a Ground Safety Data Package. A two to three sentence explanation is required for each **YES** answer. Final determination will be made by the GSRP upon review of the checklist.	
3) Does the GFE require ground processing at KSC other than stowage into the Orbiter?	No
4) Does the GFE contain hazardous materials? (Attach materials certification paper.)	No
5) Does the GFE require any unique ground support equipment, provided by the GFE developer, to process the flight hardware at KSC?	No
6) Can ground personnel be exposed to excessive temperatures (less than 0°C or greater than 45°C)?	No
7) Can ground personnel be exposed to sharp edges, protrusion, or moving parts?	No
8) Does the hardware contain ionizing or non-ionizing radiation sources?	No
9) Does the GFE or GSE contain any stored energy (mechanical, pressure, or electrical)?	No
10) Can personnel come in contact with voltages in excess of 30 volts AC or 50 volts DC during nominal or unplanned maintenance?	No
11) Has any electrical Commercial Off the Shelf (COTS) Ground Support Equipment been modified from its original design?	No
12) Does the GFE require fluid servicing (e.g. gas, liquid, cryogenics, propellants) or hazardous material handling (e.g. sample preparation) at KSC?	No

Hardware Provider:

Name (print):	Signature:	Date:
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Send to:

Secretary, GSRP
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